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MODIFIED RIKER INSECT MOUNT FOR USE IN TEACHING

BY RALPH H. SMITH,

University of California at Los Angeles

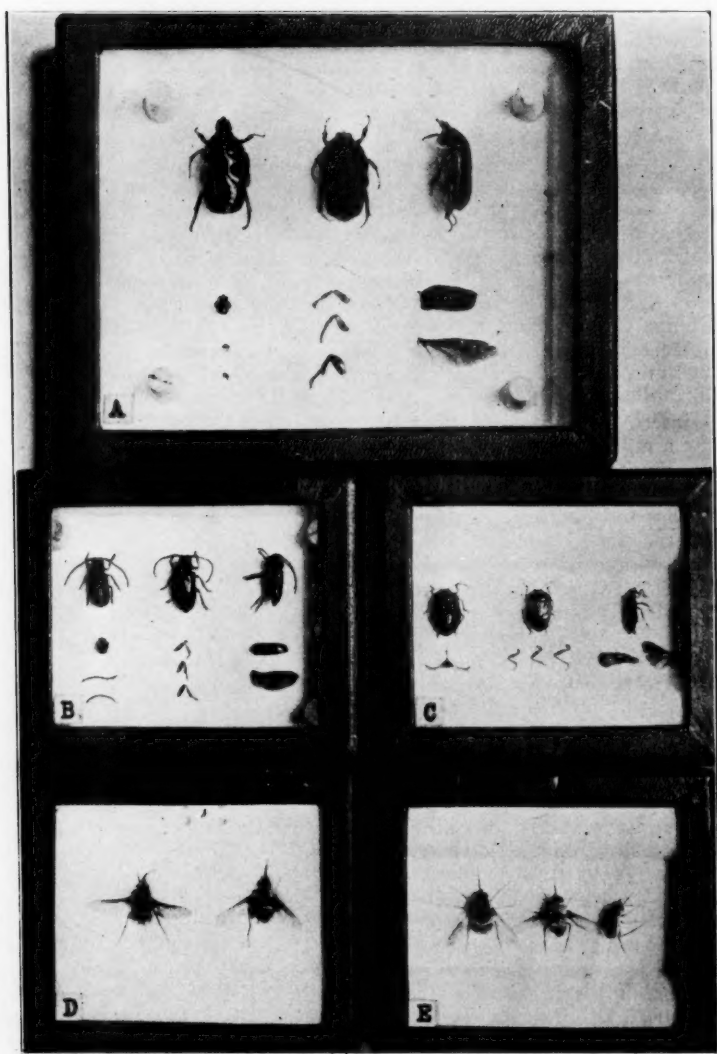
Effective instruction in entomology requires, among other things, that the student have the opportunity to see and examine to his satisfaction the insects dealt with in the course. This statement applies not only to courses in systematic and taxonomic entomology but to introductory courses and to such courses as field crop insects, truck and garden insects, stored product insects, fruit and nut insects, household insects, forest insects, medical entomology and the like. Surely, the instruction is seriously deficient where the student's acquaintance with the insects is limited to what he may hear in a lecture, or read or see in illustrations in a book.

An insect mount for teaching use should meet several specifications. It should be a mount that can be used year after year without becoming broken or otherwise mutilated. It should be convenient to handle during study and to store when not in use. The insect should be posed in a natural, life-like manner, with the appendages symmetrically arranged and in correct perspective. Thus mounted, the insect is properly displayed for photographing, for drawing and for passing appreciation or discriminating study. Where taxonomy and specific characters of identification are concerned in the course, all the parts mentioned in keys or descriptions should be displayed so that they can be readily seen by the student. To fulfill this requirement, it may be desirable to have specimens posed in dorsal view, in side view, and in ventral view. In addition, it may be desirable to have the wings, legs, antennae or other distinguishing parts displayed separately in the same mount.

The conventional Riker mount is easy to make but it does not adequately meet the requirements above indicated. The insect is imbedded in cotton and, therefore, is not displayed in a natural pose nor in normal perspective. Most of the body is hidden in the cotton and such parts as are exposed to sight can be viewed only from one direction. The appendages become pressed out of natural shape under the glass cover. The glass becomes fogged by volatile substances given off by the body and as a result it must be cleaned periodically. Legs, antennae, wings and other parts mounted separately on the cotton adhere to the glass and become displaced and sometimes broken when the glass is removed for cleaning. On the other hand, the insect and parts are held securely in place and the mount withstands rough handling without the specimens becoming broken or displaced.

The modified Riker mount (Plate XV) in use at the University of California at Los Angeles is described as follows: The insects and parts are fastened with a suitable glue to a section of glass, and a cork of suitable length is glued to each corner of the glass. A portion of the cotton is removed from the Riker box, the section of glass is pressed upon the remaining portion and is held in place by the pressure of the glass cover upon the four corks. Where the mounts are to be used for instruction in systematics and taxonomy, three insects are mounted on each section of glass, displaying dorsal, lateral, and ventral views. The wings, legs and antennae from one side of the body of a fourth insect are mounted. Where desirable, the head of the fourth insect is mounted to give a

PLATE XV.



Showing four modified Riker mounts (A, B, C, E) and one conventional type Riker mount (D). The two mounts at the bottom show the same species of bombyliid fly in a conventional mount (D) and in the modified mount (E).

full view of the front aspect. The corks are long enough to keep the insect from touching the glass cover. The technique of making the mount is described as follows: The freshly killed or fully relaxed insect is placed on a piece of balsa wood. Where the dorsal aspect is to be shown, the legs and antennae are arranged in their natural positions and are held by pins until they have thoroughly dried. Where the lateral and ventral aspects are to be shown, the appendages are arranged so as to be readily visible and are held by pins until they have thoroughly dried. The specimens may be dried quickly in an oven. When dry the insect is held with a fine-pointed, flexible forceps and a copious quantity of glue is applied to the portion of the body that is to rest upon the glass section. The insect is then held correctly oriented and placed directly down in the desired position on the glass. It is pressed gently to cause the glue to make a good contact with the glass. Lantern slide covers are used as glass sections with Rikers 4" x 5" in size, and when cut in half they serve with Rikers 1½" x 3" in size.

Insects in this type of mount can be studied with real satisfaction under a wide-field microscope. All aspects can be seen except that facing the glass section. To focus more directly upon lateral and terminal aspects, the mount can be tipped. In this way a given part can be viewed from different directions. The insect is far enough away from the cover so that the glass does not become fogged by emanations from the body. Owing to this fact the cover may be sealed with lantern slide binding tape and the Riker is thereby permanently protected against the entrance of dermestids. As compared with the conventional Riker mount, this modified mount has two shortcomings. Much more time and skill are required in making the mount than are required in making the conventional mount. The latter may be dropped to the floor without serious damage resulting to the specimen. However, the modified mounts in use at the University of California at Los Angeles have stood routine usage without damage. Care should be exercised to apply an ample amount of glue to the body and to get the insect on the glass before the glue has dried or become encrusted. A glue that tends to crystallize or become brittle is unsatisfactory. The acetone-cellulose or amylose-cellulose type of glue has been found to be satisfactory. The particular trade products used are "Ambroid liquid cement" and "Arrowhead liquid cement."

The two mounts of a bombyliid shown at the bottom of Plate XV present a comparison of the conventional Riker mount (D) and the modified mount (E). In making the former, the fully relaxed flies were arranged on the cotton. The legs were outstretched but became pressed out of normal shape and partly concealed in the cotton when the cover was applied. In removing the cover to clean the fogged inner surface, the legs became broken and the pieces were lost, or became buried in the cotton.

In the systematic part of the introductory course in entomology, the student is required to study and classify, with the aid of keys, insects that are representative of the more important families of every order. The laboratory accommodates twenty-four students, there being six benches, each seating four students. For every species studied, there are six Riker mounts identically alike, one mount for each bench. At the beginning of an exercise several Rikers, representative of a corresponding number of families, are placed on each bench. Every student at the bench studies each Riker. Following the exercise the Rikers are assembled in sets of six, and placed in storage. In making up the Riker mounts in sets of six, a layout of the position of the different views and parts is first made on a piece of paper the size of the glass section on which the insects are to be glued. The glass section is placed on the layout, and the insects and parts are superimposed in their respective positions.

A NEW SPECIES OF *LISTRUS* FROM CAJON PASS, CALIFORNIA
(COLEOPTERA, MELYRIDAE).

BY FRANK E. BLAISDELL, SR.,

Stanford Medical School and California Academy of Sciences, San Francisco, California

Listrus hoppingi n. sp.

Form parallel-oblong to elongate-subovate, about three times as long as wide. Color black; second antennal segments and prothrochanters more or less rufo-testaceous; tarsi and distal two-thirds of tibiae rufous. Luster slightly aeneous and somewhat shining.

Pubescence not dense, not entirely obscuring the body surface, recumbent but not appressed to the surface, cinereous on the upper surface to more or less plumbo-cinereous on body beneath; scutellum densely albido-pubescent. Elytral hairs slightly coarser than on the pronotum, black on the maculae, the latter forming a more or less very irregular pattern; humeral maculae very small, sometimes linearly connecting with the post-basal macula at middle of each elytron at middle third; para-scutellar maculae vary in size and form, may extend linearly caudad as para-sutural lines, giving off a spur at middle third that extends postero-laterad, usually not connecting with a small marginal macula which connects linearly and submarginally with the post-basal macula; a wider transverse subapical fascia at apical third extends across the suture and interrupted laterally forming marginal maculae; on each elytron a small apical macula is noticeable, but varying in size and distinctness. In the male type the maculae are not connected by linear extensions, but discrete, the middle fascia being very irregular and zigzag, forming an inverted N-shaped figure on each elytron which unite posteriorly forming a W-shaped figure with the middle bar cleft anteriorly; the para-scutellar maculae are larger and less hamate.

The pronotal dark areas consist of elongate para-median maculae, extending from near apex, uniting posteriorly before the base; the lateral vittae are very indefinite as are the para-median at times. On the head the dark hairs intermingle with the cinereous. Hairs of the ventral surface are slender.

Head similar in the sexes, comparatively and relatively rather small, twice as wide as long before the post-ocular line, about as wide as the pronotal apex; frons plane to slightly convex toward the vertex, a feebly convex glabrous area is present on the median line against the base of the undefined epistoma; surface densely indentato-punctate. Antennae moderate in stoutness, differing somewhat in the sexes. Segments five to nine angulate anteriorly (feebly serrate) and slightly compressed, last three slightly thicker with contour more rounded, eleventh obovate and twice as long as wide (*vide infra*).

Pronotum relatively small, about two-fifths wider than long; apex arcuato-truncate, arcuately continuous with the sides, the latter broadly arcuate, widest in basal one-half, slightly convergent and a little straighter anteriorly, broadly rounding with the arcuate base, but feebly sinuate within the position of the basal angles; base a little wider than the apex; disk quite evenly convex, densely punctate, punctures of the central area discrete with the intervals smooth or feebly and irregularly indented, laterally very densely indentato-punctate; marginal serrules small, somewhat evenly spaced and slightly blunt at apices. Fimbriae moderate in length, upwardly curved posteriorly, color pale.

Elytra more or less parallel oblong, about twice as long as wide, and about three times as long as the pronotum; base broadly emarginate, humeri well rounded and rather prominent, umbones moderately prominent; subparabolically arcuate in apical third, sutural angles obtuse; disk moderately convex in the para-scutellar area, abruptly declivous laterally in the humeral region, thence gradually less so toward apex, densely punctate, punctures separated by a distance equal to their diameter, surface feebly irregular or undulating.

Abdomen moderately convex. Legs comparatively small and short; meta-femora and tibia equal in length, the former not swollen nor arcuate, scarcely extending beyond the apex of the third abdominal segment.

Male. Parallel oblong. Antennae not quite attaining the pronotal base, notably stouter and longer than in the female; third segment one-third longer than wide, slender obconical and slightly angulate anteriorly near apex; fourth segment triangular, as long as wide, one-third wider at apex than the third; fifth elongate triangular, somewhat cylindrical at base, about one-half longer than the fourth and as wide at apex; sixth, seventh, eighth equal in length, seventh angulate anteriorly at middle, eighth and ninth subequal, triangulo-ovate, slightly longer than wide, one-third longer than seventh. Fifth abdominal segment broadly sinuate at apex, disk unmodified. Elytral maculae without linear connections.

Female. Slightly broader posteriorly, feebly narrowed anteriorly. Antennae distinctly shorter, attaining about the posterior third of the pronotum, less stout than in the male, with the segments similar but smaller, ninth and tenth less elongate; seventh distinctly angulate anteriorly at middle with the edges more broadly rounded; third obconical and not angulate anteriorly, fourth smaller and triangulo-obconical, five, sixth and eighth more rounded, seventh angulate. Elytral maculae less broad, more irregular and linearly connected (*vide supra*). Abdominal segments two and three equal in length and a little longer than the post-coxal part of the first; fourth a little longer than the third, fifth about one and one-half times as long as the fourth and arcuate at apex.

Measurements. (Types) Length 3.3 mm.; width 1.0-1.25 mm.

Holotype. Male, No. 4700, and allotype, female, No. 4701, in the author's collection, Museum of the California Academy of Sciences. Collected at Cajon Pass, San Bernardino County, California, March 31, 1937; occurs on Yucca; secured by Ralph Hopping. Twelve paratypes with same data: Six in the collection of Mr. Hopping and four in that of the author.

The elytral pattern of maculation of *hoppingi* has been described from that of the types and, as in all of the other species, the maculae and fasciae vary in outline and size, either by diminution or diffusion, but the typical pattern remains more or less recognizable. The relative size and form of the antennal segments are very important in the determination of the species*. In the male of *hoppingi* the antennae are stouter and longer than in the female and complete elytral fasciae are not present; the fifth abdominal segment is broadly emarginate at apex and not modified on the disk.

Hoppingi has to be differentiated chiefly from *pardalis* Casey, *extricatus* Casey, *bifasciatus* Blaisdell and *motschulskii* Le Conte†. In the female of *pardalis* the subapical elytral fascia is more or less interrupted laterally forming a distinct rhomboid macula across the suture, the lateral portions narrow and irregular; the species is rather widely distributed, occurring usually on the blossoms of *Ranunculus* and *Ceanothus* on the foothills of the great valleys and the type region, the mountains of Santa Cruz County, California (Casey).

Extricata occurs in Southern California and has a distinct cupreous luster; the elytra have a more or less fine bi-zigzag fascia behind the middle and a broader more or less entire straight one at apical fourth; basad the maculae are small and confused.

The male of *bifasciatus* is narrower, parallel and elongate, the female oblong-ovate; type locality Vine Hill, Contra Costa County, California. *Motschulskii* is one of the large species having a dark bluish-metallic luster, and the elytral maculae are large, rounded and rather indefinitely defined; it occurs rather plentifully on thistle blossoms in the vicinity of Benecia, California.

*Stanford Univ. Publ. Biol. Sci's., vol. 1, p. 140.

†L. c., p. 177.

TWELVE NEW NORTH AMERICAN SPECIES
OF *OSCINELLA* (DIPTERA, CHLOROPIDAE) *

BY CURTIS W. SABROSKY,

Michigan State College, East Lansing, Mich.

The North American species of the large and complex genus *Oscinella* Becker (sens. lat.) were reviewed by Sabrosky (1936, *Annals Ent. Soc. Amer.*, 29:707-728) in a synopsis based on his study of the types. Since that time, a large quantity of material has been examined, with the discovery of several undescribed species populations. Because of their close resemblance to known species, some of these have probably been confused with them in past determinations.

The section headed Group C in Sabrosky's 1936 key (p. 711), including species having a pollinose mesonotum and polished frontal triangle, must be revised to include a number of the new species. Of the four new species referable to Group B (both mesonotum and triangle polished), *painteri* is near *nudiuscula*, *gigas* and *lugubria* are near *halterata*, and *grandissima* is a peculiar species which is abundantly distinct from any in the genus. The remaining species, *grisescens* and *triorbiculata*, pass to Group D and can be readily incorporated.

OSCINELLA, GROUP C OF SABROSKY (1936)

1. Palpi black 2.
Palpi yellow or orange 6.
2. Pleura entirely shining black; frontal triangle large, reaching the anterior margin of the front *Oscinella frit* (L.)
Pleura pollinose on the upper half; frontal triangle shorter, usually only slightly over half the length of the front 3.
3. Two pairs of fronto-orbital bristles strongly developed, much longer than the other fronto-orbitals; western to southwestern species 4.
No such outstanding fronto-orbital bristles; eastern and northern species 5.
4. Legs predominantly black, the coxae and femora entirely so *Oscinella hesperia* Sabrosky.
Legs yellow, especially the coxae and femora *Oscinella fronto-orbitalis* Sabrosky.
5. Head and antennae entirely black; third antennal segment rounded apically *Oscinella carbonaria* (Loew).
Head brown to black; third antennal segment angulate apically, reddish on the inner surface *Oscinella criddlei* (Aldrich).
Face, cheeks and anterior 2/5-1/2 of the front conspicuously yellow, third antennal segment rounded; antennae entirely black *Oscinella luteiceps* Sabrosky.
6. Legs predominantly black 7.
Legs predominantly yellow 8.
7. Metanotum pollinose, dull; cheeks broad, subequal the breadth of the third antennal segment; third antennal segment black in the females, partially yellow in the males *Oscinella coxendix* (Fitch).
Metanotum polished black; cheeks narrow, 1/2 the breadth of the third antennal segment; antennae black in both sexes *Oscinella neocoxendix* Sabrosky.
8. Two pairs of stout black intrahumeral bristles present; notopleural bristles 1 + 1; metanotum polished black; large species, 2.5 mm. *Oscinella beameri* Sabrosky.
No intrahumerals present; notopleurals 1 + 2; metanotum pollinose; smaller species, 1.25-1.5 mm. *Oscinella ochripes* Sabrosky.

*Journal Article No. 444 (n.s.) from the Michigan Agricultural Experiment Station.

Oscinella coxendix (Fitch)

Oscinis coxendix Fitch. 1856. Second New York Report, p. 533 (♂).

Oscinella coxendix Becker. 1912. Ann. Mus. Nat. Hung., X, p. 115 (♀).

Oscinella coxendix var. *obscura* Coquillett of Becker. 1912. Loc. cit., X, p. 115 (♂).

Oscinella coxendix var. *pullicornis* Sabrosky. 1936. Annals Ent. Soc. Amer., XXIX, p. 721.

New synonym (= ♀ *coxendix*).

Collection and tabulation of a number of samples resulted in the discovery of the long overlooked fact that the "color variety" *pullicornis* Sabrosky (= *obscura* Coq. of Becker) is in reality the female sex of the common and widely distributed species, *Oscinella coxendix* (Fitch).

It has usually been said that the Chloropidae in general show very little if any sexual dimorphism. The present instance, coupled with Malloch's discovery of the sexual dimorphism in *Hippelates pallipes* and the writer's observations on *Oscinella abdominalis*, *O. incerta*, and other species (Sabrosky, 1935, Trans. Amer. Ent. Soc., LXI, p. 259, 263), forces one to the conclusion that many of our species and "varieties" should be scrutinized carefully, especially where they are founded upon few specimens or upon one sex only.

A number of western specimens have been seen which resemble typical *coxendix* in every way except for darker front and fore coxae. The color of the latter varies from completely yellow to completely black, however, and it is concluded that the darkening is melanism due to lower temperatures and higher altitudes. It does not seem necessary to propose a sub-specific name for those darker forms.

The close resemblance of *O. coxendix* to *Hippelates dissidens* (Tucker) (= *H. texana* Malloch) has often made it difficult to identify specimens in which the presence or absence of a hind tibial spur could not be ascertained with certainty. I have found a very convenient character to be the presence or absence of pollen on the ocellar tubercle. In *coxendix* the tubercle is densely gray pollinose, in contrast to the smooth, polished frontal triangle, whereas in *dissidens* the tubercle lacks pollen and does not contrast with the triangle. This character appears to be quite generally useful in separating *Hippelates* from *Oscinella* in all but a few cases. Some species have a very short black bristle on the hind tibia in the spur's usual position, but they are referred to *Oscinella* because of the pollinose ocellar tubercle. The separation of *O. neocoxendix* and of melanic specimens of *coxendix* from *H. dissidens* (normally black fore coxae) is especially facilitated by the use of the character.

Oscinella neocoxendix n. sp.

Similar to *Oscinella coxendix* (Fitch), but with narrower cheeks and front, entirely black antennae, polished metanotum and yellow prosternum.

♂, ♀. Head yellow, the occiput, triangle, shining clypeus, and entire antennae, black, the posterior half of the front gray to blackish and the proboscis reddish brown to black. Palpi yellow. Face and cheeks silvery pollinose. The frontal triangle extends barely over half way to the anterior margin of the front, polished black, its basal corners and the ocellar tubercle gray pollinose. Front barely $1\frac{1}{4}$ times the width of an eye in dorsal view, or slightly more than $\frac{1}{3}$ the width of the head. Cheeks narrow, their height equivalent to $\frac{1}{2}$ the breadth of the third antennal segment and $\frac{1}{5}$ the height of an eye (Fig. 1). Eyes sparsely pollinose. Arista densely short pubescent. Ocellar and postvertical bristles erect, cruciate. The numerous pale frontal and fronto-orbital hairs are not conspicuous.

Thorax black, bright gray pollinose except for the polished metanotum and lower half of the pleura. Prosternum yellow. Mesonotum and scutellum with numerous short and inconspicuous hairs. Scutellum short and broad, apically rounded, the apical bristles longer than the scutellum, one pair of shorter subapicals. Notopleural bristles, 1 + 2.

Abdomen brown, dark pollinose, the venter yellow.

Legs as in *coxendix*, predominantly black or black-brown, with yellow knees on the fore legs, and yellow fore coxae, the latter sometimes slightly infuscated but always predominantly yellow. The yellow prosternum and fore coxae, together with frequently yellowish fore femora, result in a much brighter appearance about the fore legs than in *coxendix*.

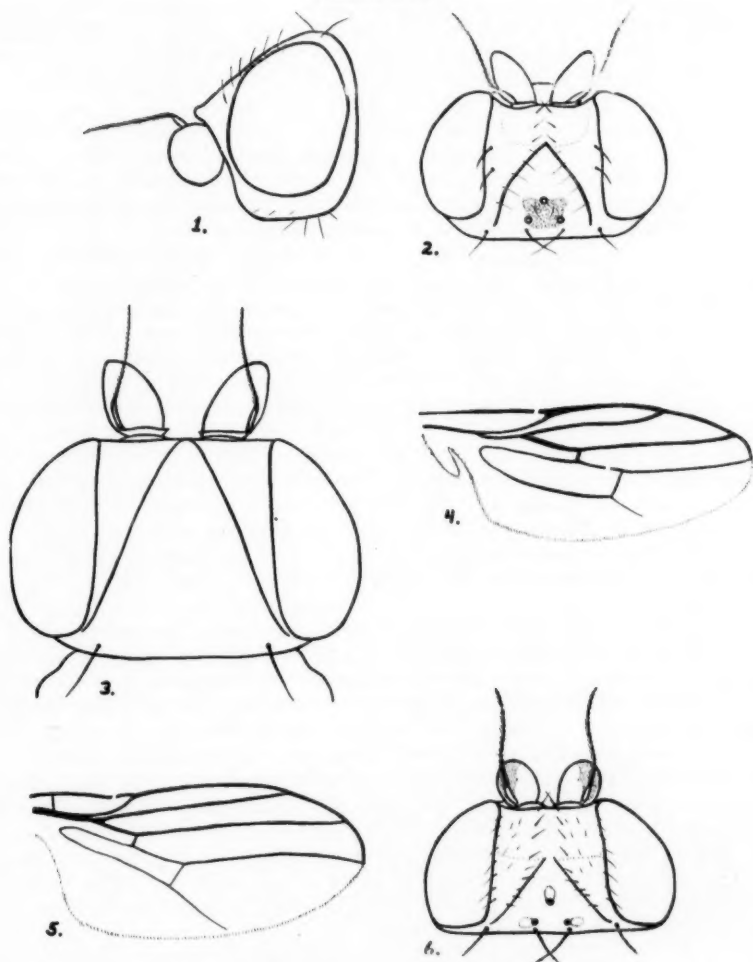
Wings hyaline, veins brown; the venation regular and similar to *coxendix*, third and fourth veins subparallel, fore cross vein opposite the middle of the discal cell. Halteres pale yellow.

Length: 1.25-1.75 mm., generally about 1.5 mm.

Range: eastern to southeastern United States.

Type, ♂, Billy's Island, Okefenokee Swamp, Georgia, June, 1912. Allotype, same data. Type and allotype in the Cornell University Collection. Paratopotypes: 21 ♂, 38 ♀, June, 1912; 6 ♂, 15 ♀, June 15, 1912; and 4 ♂, 10 ♀, July, 1912 [Cornell Univ. Colln.]. Paratypes: *Alabama*: 2 ♀, Mobile, Oct. 19, 1922, and Kushla, Oct., 1924; 2 ♂, Kushla, Oct. 7-19, 1922 and Whistler, Oct. 20, 1924 (A. H. Sturtevant) [Amer. Mus. Nat. Hist.]. *Florida*: 1 ♀, "S. Fla.," March, 1923 (J. S. Hine) [Hine Colln., Ohio State Univ.]; 2 ♂, 1 ♀, Belle Glade, March 16, 1930, in *Hippelates* fly trap, and 1 ♀, Naples, March 15, 1931, "about man" [U. S. Nat. Mus.]. *Georgia*: 1 ♂, 1 ♀, Mixon's Hammock, Okefenokee Swamp, June 16, 1912 [Cornell Univ. Colln.]; 1 ♂, LaGrange, Aug. 17, 1918 [Amer. Mus. Nat. Hist.]. *Illinois*: ♂, ♀, Champaign, June 29, 1885 and Aug. 2, 1889 (Hart) (♂); ♂, Monticello, June 28, 1914; 2 ♂, Urbana, June 19, 1888 (Marten), and July 10, 1900 (E. B. Forbes); ♀, Urbana (H. T. Osborn); 3 ♀, Freeport, July 2, 1917, Elizabeth, July 6, 1917, and Normal, June 27, 1883 [All in Ill. Nat. Hist. Survey Colln.]. *Kansas*: 1 ♀, Manhattan, May 26, 1930 (R. C. Smith) [Kansas State College Colln.]; 1 ♀, Douglas Co., Sept. 30, 1933 (H. M. Smith) [Sabrosky Colln.]. *Louisiana*: 1 ♂, 5 ♀, Many, July 6, 1933 (C. W. Sabrosky) [Sabrosky Colln.]. *Maryland*: 1 ♂, Cabin John, Aug. 26, 1928, and 8 ♂, 6 ♀, Plummer's Island, Aug. 23, 1928 (G. Enderlein) [Zool. Mus., Univ. Berlin]. *Massachusetts*: 1 ♂, Woods Hole, July 5-21, 1922 (A. H. Sturtevant), and 1 ♀, same locality, Aug. 9, 1899 (W. M. Wheeler) [Amer. Mus. Nat. Hist.]. *Michigan*: 1 ♀, Saugatuck, June 25, 1938, and 2 ♀, Nottawa, Aug. 26 and 28, 1933 (C. W. Sabrosky) [Sabrosky Colln.]. ♀, Grand Junction, July 15, 1914 [Ill. Nat. Hist. Survey]. *Mississippi*: 1 ♂, Lincoln Co., May 27, 1938, in peach orchard, and 1 ♂, 1 ♀, same locality, May 28, 1938, "from peach" (W. F. Turner) [U. S. Nat. Mus.]. *Missouri*: 4 ♀, Atherton, May 21, 1916, and June 2 and 11 (two), 1922 (C. F. Adams) [Purdue Univ. Colln.]. *New York*: 1 ♂, New York, Oct. 7, 1921 (A. H. Sturtevant) [Amer. Mus. Nat. Hist.]; 1 ♂, Babylon, L. I., Sept. 29, 1933 (F. S. Blanton) [Blanton Colln.]; 1 ♀, Van Cortland Park, July 20, 1913 [Acad. Nat. Sci. Phila.]; 7 ♂, 14 ♀, Ithaca, Aug. 7, 12, 14 and 17, 1928, and 27 ♂, 28 ♀, Geneva, Aug. 5, 15, and 16, 1928 (G. Enderlein) [Zool. Mus., Univ. Berlin]. *North Carolina*: 1 ♂, Raleigh, Late July, and 1 ♀, same locality, Early August (F. Sherman) [N. C. Dept. Agric. Colln.]. *Oklahoma*: 2 ♂, 1 ♀, Ada, July 16, 1937; 1 ♂, Sherwood, June 27, 1937; and 1 ♀, Broken Bow, June 29, 1937 (All coll. by John Standish and R. W. Kaiser) [Oklah. A. & M. Coll.]. *Pennsylvania*: 1 ♂, Terre Hill, Jan. 14, 1915 and 1 ♀, Middleburg, Dec. 18, 1914, both "reared from wheat" in cage (P. R. Myers) [U. S. Ent. Lab., Carlisle, Penn.]; 2 ♀, Pittsburg, Aug. 20, 1928 (G. Enderlein) [Zool. Mus., Univ. Berlin]. *Texas*: 1 ♂, 1 ♀, El Paso, July 23, 1914 (J. C. Bradley) [Cornell Univ. Colln.]; 2 ♂, Sugarland, July 11, 1933 (C. W. Sabrosky) [Sabrosky Colln.]. *Vermont*: 1 ♀, Waterbury, July 16, 1936 (Blanton and Borders) [F. S. Blanton Colln.]. *Virginia*: 1 ♂, Mountain Lake, July 9, 1938 (L. J. and M. J. Milne) [Geo. Steyskal Colln.]; 1 ♂, Falls Church, Sept. 14 (N. Banks) [Mus. Compar. Zool.]. *Wis-*

PLATE XVI.



NORTH AMERICAN SPECIES OF OSCINELLA

consin: 4 ♂, 6 ♀, Sturgeon Bay, July 28, 1919, and 1 ♂, Mazmanic, July 29, 1918 (C. L. Fluke) [Fluke Colln.]; 1 ♀, Worden Twnp., Clark Co., July 27, 1919 [Amer. Mus. Nat. Hist.].

Proportion of sexes in the type series: 102 ♂, 150 ♀.

Generally speaking, the coxae appear to be darker in northern than in southern and especially southeastern specimens. Undoubtedly it has passed hitherto as a mere variant of *coxendix*, but the narrower cheeks and front and the polished metanotum serve amply to distinguish it. It is also noteworthy that in *neocoxendix*, the antennae are black in both sexes, whereas *coxendix* shows a striking sexual dimorphism in the color of the third antennal segment.

Oscinella ochripes n. sp.

Near *O. coxendix*, but with yellow legs, narrower cheeks, more strongly yellow antennae in the male, and whitish-yellow hairs.

♂. Head like *coxendix*, but more extensively yellow, the face, cheeks, front and palpi entirely yellow and the antennae deep yellow except narrowly about the base of the arista, or a sublinear brown spot along the upper side of the third segment; arista brown, short pubescent; clypeus shining brown; face and cheeks whitish, the latter slightly narrower or subequal to the height of the 3rd antennal segment and about one-third the height of an eye. The cheek width is intermediate between *coxendix* and *neocoxendix*. Front narrower than in *coxendix*, appearing little wider than an eye in dorsal view, slightly infuscated near the basal corners of the triangle. Frontal triangle short, barely over one-half the length of the front and quite broadly separated from the eyes at the vertex, polished black, only the ocellar tubercle pollinose. Eyes with short, sparse pubescence. Hairs and bristles pale, rather long, only the cruciate postvertical and the outer vertical bristles brown or black and strong; ocellar bristles erect and cruciate but short and weak; six pairs of long, pale fronto-orbital hairs.

Thorax entirely black, brown-gray pollinose, only the lower half of the pleura polished and without pollen. Hairs and bristles pale whitish-yellow, the posterior bristles darker but the notopleurals especially pale: 1 weak humeral, 1 + 2 notopleural, 1 postalar, 1 post. dorsocentral, 1 subapical and 1 apical scutellar bristles.

Abdomen brown, venter yellow; hairs pale, whitish-yellow.

All coxae and legs yellow, the fore and hind tibiae and all tarsi more or less browned. "Sensory area" on the hind tibiae elongate, sublinear. The hairs on the legs, like those of thorax and abdomen, are bright whitish-yellow.

Wings clear, veins light brown, the second costal sector slightly but definitely longer than the third sector, second vein nearly straight, third and fourth veins straight and subparallel; fore cross-vein opposite the middle of the discal cell; anal angle of the wing well developed; ultimate portion of the fifth vein subequal to or greater than the penultimate. Halteres bright yellow.

♀. Like the males except for entirely black antennae.

Length: 1.25-1.5 mm.

Type, ♂, Needles, California, April 1-6, 1918 (J. C. Bradley). Allotype, same data. Type and Allotype in the Cornell University Collection. Paratypes: 46 ♂, 28 ♀, same data as type [Cornell Univ., and Author's Collection].

It is interesting to find that *ochripes* exhibits the same sexual dimorphism as *coxendix*, which it resembles. The dimorphism is even more striking in the former because the male antennae are more extensively yellow.

Oscinella hesperia n. sp.

Closely related to the Central American species described by Duda as *Neoolcanabates orbitalis* (later referred to *Tropidoscinis*), but easily distinguished by the polished black frontal triangle, with pollen only on the ocellar tubercle. In *orbitalis*, the entire triangle is pollinose, although appearing subshining because of the sparseness of pollen.

♂, ♀. Head black, only a small semicircular area on the front (Fig. 2), the cheeks and the margins of the face, yellow; cheeks finely white pollinose. Frontal triangle polished black, only the ocellar tubercle pollinose; triangle shorter than broad, about $\frac{2}{3}$ the length of the front, ending subacutely. Cheeks not over half as broad as the large third antennal segment. Antennae entirely black, the arista microscopically pubescent. Eyes densely covered with short pale hairs. The outer vertical, cruciate postvertical and two pairs of fronto-orbital bristles strongly developed, about equally long, the latter located midway on the front; the inner vertical and the erect and slightly convergent ocellar bristles, also the remaining fronto-orbitals, are weakly developed and not distinct from the numerous short black hairs on the front.

Thorax entirely black, subshining but brown pollinose, the lower half of the pleura polished black; metanotum chiefly polished black, but pollinose mesally near the base of the scutellum; inner angle of each humerus orange, appearing from directly above as two small triangles of color just behind the head. Mesonotum and scutellar disk sparsely beset with short black hairs; bristles developed: 1 + 1 notopleural, 1 posterior dorsocentral, 1 long apical and 1 short subapical scutellar, the humeral and upper posterior notopleural bristles present but weak and inconspicuous.

Abdomen black or pitch black with black hairs, subshining although finely and inconspicuously pollinose.

Legs chiefly black, the fore coxae, all femora and the hind tibiae consistently so, but the fore and mid tibiae and all tarsi paling to brown or yellowish-brown in some specimens; knees usually narrowly orange. "Sensory area" on the hind tibiae small but distinct.

Wings hyaline, veins brown, the venation similar to that of *coxendix*; second costal sector subequal to or slightly longer than the third sector, third and fourth veins straight and diverging slightly, the fore cross-vein entering the discal cell distinctly beyond the mid-point. Knob of the halteres bright yellow, appearing very conspicuous on this dark species.

Length: 1.5-1.75 mm.

Range: western North America, from British Columbia south to California and New Mexico and east to Kansas and Oklahoma.

Type, ♂, Cedar City, Utah, Aug. 13, 1929 (Paul W. Oman). Allotype, same data. Type and allotype in the Snow Entomological Collection, University of Kansas. Paratopotypes, 28 ♂, 28 ♀, same data as type and 3 ♂, 2 ♀, same locality and date (L. D. Anderson) [Snow Colln., Kansas Univ.]. Paratypes: *Arizona*: 1 ♂, 1 ♀, Greer, Apache Co., Aug. 24, 1935 (I. J. Cantrall) [Univ. Mich., Mus. Zool.]. *British Columbia*: 1 ♀, Oliver, Aug. 6, 1931 (H. T. Peters) [Kans. Univ.]. *California*: 1 ♂, Lemon Cove, July 26, 1929 (R. H. Beamer). 1 ♂, Laguna Mts., July 6, 1929 (R. H. Beamer), 1 ♂, Orange Co., July 14, 1929 P. W. Oman. 1 ♀, Alpine, July 9, 1929 (R. H. Beamer), 1 ♂, Yosemite Valley, July 10, 1933 (R. H. Beamer) [All in Kans. Univ. Colln.]; 1 ♀, Long Beach, June 25, 1935 (M. T. James) [Colo. State College]; 2 ♀, Davis, October (C. F. Adams) [Purdue Univ. Colln.]; 3 ♂, 3 ♀, Saugus, Los Angeles Co. Oct. 5, 1939 (R. W. Burgess) [Burgess Colln.]; 1 ♂, 2 ♀, Antioch, Sept. 18, 1936 and 21 ♂, 25 ♀, Antioch, Oct. 18, 1936 (R. C. Dickson) [R. M. Bohart Colln.]; 1 ♀, Los Angeles Co., Dec 22, 1896 [Hough Colln., Field Mus.]; 1 ♀,

Saugus, Los Angeles Co., May 12, 1918 (F. M. Jones) [Acad. Nat. Sci. Phila.]; 1 ♀, San Bernardino, July 16, 1897, and 2 ♂, Los Angeles, July 26, 1897 (A. P. Morse) [Mus. Compar. Zool.]; 1 ♀, Palo Alto, July 17, 1921 and 3 ♀, Del Monte, Sept. 3, 1920 [Amer. Mus. Nat. Hist.]; 1 ♂, Jacumba Springs, June 28, 1917 (J. M. Aldrich); 2 ♂, 1 ♀, San Diego, Dec. 13, 1916 (H. G. Dyar); 1 ♂, San Diego, April 8, 1916 (Dyar); 1 ♀, Stockton, July 25, 1926 (T. D. Urbahns) [All in U. S. Nat. Mus.]; 6 ♂, 7 ♀, Descanso, San Diego Co., Aug. 7, 1914; 1 ♀, Ramona, San Diego Co., Aug. 15, 1914; 6 ♀, Palm Canyon, Palm Springs, Dec. 17, 1917; 1 ♀, Sugar Pine, Madero Co., 4300-5000 ft., Aug. 24-31, 1914; 7 ♀, Cloverdale (All Coll. J. C. Bradley) [Cornell Univ. Colln.]. *Colorado*: 6 ♂, 9 ♀, Florissant, June 1, 1938 (M. T. James); 2 ♂, 4 ♀, Roggen, Aug. 31, 1938 (M. T. James); 1 ♀, Ft. Collins, Aug. 12, 1937 (M. and H. James) [All in Colo. State College]; 1 ♂, 15 ♀, Pingree Park, Aug. 13 and 14 (one ♀), 1934, Alt. 9000 ft. (C. W. Sabrosky) [Sabrosky Colln.]; 3 ♀, Pingree Park, Aug. 17, 1932 (C. L. Kluge) [Fluke Colln., Univ. Wis.]; 1 ♀, Pingree Park, Larimer Co., Aug. 17-22, 1925 (F. C. Hottes) [Univ. of Minn.]; 1 ♂, Pingree Park, Aug. 22, 1931 (R. H. Beamer); 1 ♂, Poudre River Canyon, Aug. 22, 1931 (J. Nottingham); 1 ♂, Maybell, Colo., June 30, 1931 (R. H. Beamer); 1 ♂, Walden, Aug. 20, 1931 (H. T. Peters) [All in Kans. Univ.]. *Idaho*: 1 ♀, Payette, Aug. 26, 1907 (E. G. Titus) [Utah Agr. Exper. Sta. Colln.]. *Kansas*: 1 ♂, 2 ♀, Ottawa Co., April 30, 1933 (C. W. Sabrosky, R. H. Painter) [Sabrosky Colln.]; 1 ♂, Manhattan, March 28, 1932 (C. W. Sabrosky) [Sabrosky Colln.]; 1 ♂, Manhattan, March 19, 1928, swept from wheat, (C. W. Witney) [Kansas State College]. *Montana*: 4 ♂, 1 ♀, Drummond, Aug. 11, 1931 (R. H. Beamer); 4 ♂, 4 ♀, Anaconda, Aug. 12, 1931 (J. Nottingham, H. T. Peters); 2 ♀, Missoula, Aug. 11, 12, 1931 (J. Nottingham); 3 ♀, Bennett, Aug. 12, 1931 (H. T. Peters) [All in Kans. Univ.]. *Nevada*: 5 ♀, Steamboat, May 13, 1917 (H. G. Dyar) [U. S. Nat. Mus.]; 1 ♀, Carson City, Aug. 9, 1929 (P. W. Oman) [Kans. Univ.]. *New Mexico*: 2 ♂, 6 ♀, Luna, Catron Co., July 30, 1935, Alt. 7000 ft., (I. J. Cantrell) [Univ. Mich., Mus. Zool.]; 2 ♀, Jemez Springs Mts., June, (C. F. Adams) [Purdue Univ. Colln.]. *Oklahoma*: 2 ♀, Ada, July 16, 1937, and Grandfield, July 5, 1937 (John Standish and R. W. Kaiser) [Oklah. A. & M. Colln.]. *Oregon*: 1 ♂, 2 ♀, North Powder, July 13, 1931 (J. Nottingham, M. W. Sanderson, R. H. Beamer) [Kansas Univ.]. *South Dakota*: 3 ♂, 1 ♀, Cascade Springs, July 30, 1935 (H. C. Severin) [S. Dak. State Coll.]. *Utah*: 1 ♀, Weber Canyon, July 4, 1931 (J. Nottingham) [Kans. Univ.]; 7 ♂, 23 ♀, Spanish Fork (D. Elmo Hardy) [Kans. Univ.]; 2 ♀, Provo, (D. E. Hardy) [Kans. Univ.]; 1 ♂, 3 ♀, Timpanogas, (D. E. Hardy); 2 ♀, Hooper, Aug. 13 and 17, 1937 (D. E. Hardy); 1 ♂, 1 ♀, Logan Canyon, April 17, 1938 (Hardy); 7 ♂, Ogden, June 30, 1937 (Hardy), Cornish, Aug. 21, 1938 (Hardy and G. F. Knowlton), Kimball, Aug. 5, 1938 (Knowlton and G. S. Stains), Indian Creek, San Juan Co., Aug. 25, 1938 (Knowlton and F. C. Harmston), Farmington, July 9, 1937, on corn (D. E. Hardy), Logan Canyon, July 25, 1938 (Knowlton and Harmston), and Eden, June 21, 1937 (D. E. Hardy); 6 ♀, Richmond, June 11, 1938 (Knowlton and W. P. Nye), Smithfield, Aug. 24, 1932, on beets (G. F. Knowlton), Randolph, Sept. 21, 1938 (Knowlton and Harmston), Gove, April 15, 1934 (Knowlton), Wanship, Aug. 8, 1938 (Knowlton and Stains), and Brigham, June 17, 1938 (Hardy and Stains) [All from Utah Agr. Exper. Sta.].

Proportion of sexes in the type series: 120 ♂, 200 ♀.

The generic position of the species is open to question, but for the present I have assigned it to *Oscinella*. Many segregates of the latter have been proposed, in all faunal realms, and a careful, broadly founded study must ultimately be made to determine the status of the numerous proposals, whether valid genera, subgenera, or synonyms. The species *orbitalis* Duda, *hesperia* Sabrosky, and *fronto-orbitalis* Sabrosky are unquestionably closely related species and will pass

together into whatever group seems best. The first two are somewhat similar to *Oscinella coxendix*, especially to the female with black antennae, but are readily separated by their black palpi, black fore coxae, narrower cheeks, and two strongly developed pairs of fronto-orbital bristles. *O. neocoxendix* Sabrosky likewise has narrow cheeks and black antennae, but it has yellow palpi and weak fronto-orbital hairs, and ranges in eastern United States.

It is likely that the ranges of *orbitalis* and *hesperia* adjoin or overlap somewhere in northern Mexico, but definite records or specimens are lacking. The northernmost specimens of *orbitalis* thus far seen are two females, Mexico City, D. F., July, 1897, which appear to belong to *orbitalis* although slightly atypical.

Oscinella fronto-orbitalis n. sp.

Very similar to *Oscinella hesperia* Sabrosky, but with almost entirely yellow legs.

♂, ♀. Head as described for *O. hesperia*, the cheeks a shade narrower and the yellow color slightly more extensive and brighter on the face and front; two pairs of fronto-orbital hairs are strongly developed as in *O. hesperia*, possibly a little longer, stronger and more distinct.

Thorax as in *hesperia*, the humeri conspicuously polished and not pollinose, and the scutellum ventrally yellowish; prosternum yellow.

Abdomen brown to black-brown, subshining though sparsely pollinose; hairs paler than in *hesperia*.

Coxae and legs yellow to deep yellow, fore and hind tibiae and all tarsi brown, the fore tarsi black; the fore and hind tibiae are yellowish on the flexor, and brown to blackish on the extensor surfaces.

Wings and halteres as in *hesperia*, but the fore cross vein is opposite, or very slightly beyond, the middle of the discal cell.

Length: 1.5-1.75 mm.

Known range: southwestern United States from Utah to Coachella Valley, California.

Type, ♂, St. George, Utah, May 22, 1919. Allotype, same locality, Sept. 30, 1939 (G. F. Knowlton and F. C. Harmston). Type and Allotype to be returned to the Utah Agricultural Experiment Station. Paratopotypes: 2 ♀, Oct. 12, 1938, meadow sweepings (Knowlton and Harmston) [Utah Agr. Exper. Sta.]. Paratypes: *Arizona*: 1 ♀, Cochise Co., July 29, 1927 (P. A. Readio) and 1 ♀, Coconino Co., Aug. 13, 1927 (R. H. Beamer) [Kans. Univ. Colln.]. *California*: 4 ♀, Coachella, Nov. 12, 1939 (R. W. Burgess) [Burgess, Sabrosky Colln.]; 2 ♂, Palm Canyon, Palm Springs, Dec. 17, 1917, and Cloverdale (Both Coll. J. C. Bradley) [Cornell Univ. Colln.]; 1 ♂, 1 ♀, Needles, April 1-6, 1918 (J. C. Bradley) [Cornell Univ.]. *New Mexico*: 1 ♀, Mesilla Park, Mar. 22, 1909, swept from wheat (C. H. Ainslie) [U. S. Nat. Mus.]. *Utah*: 1 ♀, Hurricane, June 18, 1935, on grape (G. F. Knowlton) [Utah Agr. Exper. Sta.].

Proportion of sexes in type series: 4 ♂, 12 ♀.

Oscinella fronto-orbitalis forms with *hesperia* and *orbitalis* a small group of species which may be found to deserve generic or subgeneric rank.

Oscinella beameri n. sp.

Larger species than usual for *Oscinella*, bright gray pollinose except for the triangle and lower portion of the pleura, and bright yellow legs.

♀. Head and palpi bright yellow, the face and cheeks whitish, the occiput, triangle, arista and upper half of the third antennal segment black, clypeus shining black, proboscis shining brown. Front deep yellow, darkening to brown on the posterior half. Basal antennal segments orange or infuscated dorsally. Arista short pubescent, eyes with dense short pale hairs. Front slightly wider than

an eye, but not as broad as long. Frontal triangle short, narrowly separated from the eyes at the vertex and barely over half the length of the front, entirely black, with a large ocellar spot of bright gray pollen which covers the ocellar tubercle and extends antero-laterad, the remainder of the triangle shining black but not glossy, the shine interrupted by a fine facetting. Head higher than long, the front slightly projecting. Cheeks narrow, one-half the height of the third antennal segment. Outer vertical, cruciate postvertical and erect, convergent ocellar bristles stout and black though not long, the inner verticals pale and hair-like, equal to the 5-6 pairs of fronto-orbital hairs.

Thorax entirely black, densely bright gray pollinose, except for the polished black metanotum and lower half of the pleura. Scutellum short and broad, semicircular in outline. 1+1 notopleural, 2 postalar, 1 posterior dorsocentral and 1 apical scutellar pairs of bristles black and well developed, the notopleurals short and especially stout. The upper posterior notopleural bristle is present but no different than the numerous pale mesonotal hairs. The humeral and one pair of subapical scutellar bristles are long, slender, pale brown, and inconspicuous. A peculiar characteristic of the species is the presence of two pairs of stout black intrahumeral bristles, situated mesad of the humeri on the anterior declivity of the notum, the bristles directed laterad.

Abdomen brown, the base, apex narrowly, and venter yellow.

Prosternum, fore coxae and legs yellow, only a broad black-brown ring on the hind tibiae, and the mid and hind femora, distal two segments of fore tarsi and distal segment of other tarsi brown. "Sensory area" on the hind tibiae large.

Wings clear, veins brown, second costal sector longer than the third sector, third and fourth veins parallel, fore cross vein beyond the middle of the discal cell. Halteres lemon-yellow.

Length: 2.5 mm.

Type, ♀, State Lake near Bennington, Ottawa County, Kansas, June 24, 1934 (C. W. Sabrosky). Paratypes: ♀, topotypic, June 23, 1934 (C. W. Sabrosky); ♀, Manhattan, Kansas, June 26, 1934 (C. W. Sabrosky). Type deposited in the Snow Entomological Collection, University of Kansas. Paratypes in the author's collection.

The paratopotype has three intrahumeral bristles on the left side and only one on the right, although the specimen is damaged, and others may have been broken. This specimen is probably an aberrant example, however, because the two pairs of intrahumerals appear so regular in the type and other paratype.

The species is named in honor of Dr. R. H. Beamer of the University of Kansas, in appreciation of his friendly cooperation and many favors to the writer.

***Oscinella luteiceps* n. sp.**

Black species, with entirely black antennae and palpi, and yellow face, cheeks and front (in part). Near *O. criddlei*, but the latter has an entirely brown to black head, and superficially very similar to *O. incerta*, although the latter falls in the group having entirely pollinose frontal triangle.

♂, ♀. Head, including the entire antennae and palpi, black, but the face, cheeks and anterior $2\frac{5}{8}$ of the front conspicuously yellow. Front subequal to or narrower than the width of an eye, dull, the frontal triangle polished black, except for the large, gray pollinose ocellar tubercle, and equilateral, extending slightly over half way to the anterior margin of the front. Face receding in profile, the vibrissal angle rounded. Cheeks narrow, barely $\frac{1}{3}$ the breadth of the third antennal segment and about $\frac{1}{6}$ the eye height. Basal segment of the arista thickened, the arista microscopically pubescent. Eyes short pubescent. The usual head bristles present, black but weak and hair-like. Post-vertical bristles cruciate toward the tips, and ocellars erect and slightly convergent, four pairs of long fronto-orbital hairs, vibrissal hair pale and weak.

Thorax black, gray pollinose except for the polished lower half of the pleura and the greater portion of the metanotum. Mesonotum sparsely covered with short pale hairs set in rows. Bristles black, but not prominent: 1 weak humeral, 1+1 notopleural, 1 postalar, 1 posterior dorsocentral, 1 weak subapical and 1 long apical scutellar bristles.

Abdomen dark brown with dark hairs, subshining though thinly pollinose.

All coxae, femora, except narrowly at the knees, and the hind tibiae broadly, black, the fore and mid tibiae sometimes slightly infuscated basally, and the distal segment or two of the tarsi browned, the remainder of the legs bright yellow.

Wings clear, veins brown, second costal sector slightly longer than the third sector, third and fourth veins divergent at their tips, fore cross-veins opposite the middle of the discal cell. Halteres lemon-yellow, the stalk brown.

Length: 1.25-1.5 mm.

Range: north central United States.

Type ♂, Champaign Co., Illinois, June 28, 1925 (M. W. Shackleford).

Allotype, same data. Type and allotype in the Canadian National Collection. Paratopotypes: 2 ♂, 19 ♀, same locality as type, June 28, July 5, 12, 19, and 26, 1925 (M. W. Shackleford) [Canad. Natl. Colln.]. Paratypes: *Illinois*: 2 ♂, 7 ♀, Urbana, June 20, 1915, and 1 ♀, Algonquin, June 15, 1896 [Ill. Nat. Hist. Survey]. *Iowa*: ♂, Boone Co., July 4, 1932 (Barker) and ♀, Hancock Co., June 22, 1932 (Barker) [Iowa Wesleyan College Colln.]. *Kansas*: ♂, ♀, Manhattan, June 4, 1933 (C. W. Sabrosky) [Sabrosky Colln.]; 4 ♀, Manhattan, June 18, 1930 (D. A. Wilbur) [Kansas State College, and Sabrosky Colln.]. *Michigan*: ♂, Beulah, July 8, 1936, and ♀, South Haven, July 5, 1938 (C. W. Sabrosky) [Sabrosky Colln.]; ♀, Midland Co., June 30, 1936 (R. R. Dreisbach) [Dreisbach Colln.]; ♀, Cheboygan Co., July 2, 1934 (Marjorie P. Dobrovolsky) [Kans. State College]. *Missouri*: ♀, Atherton, June 21, 1922 (C. F. Adams) [Purdue Univ. Colln.]. *New York*: 2 ♂, 1 ♀, Ithaca, July 1, 1925 (Babiy) [Cornell Univ. Colln.]; ♂, ♀, Ithaca, Aug. 12, 1928 (G. Enderlein) [Zool. Mus., Univ. Berlin]; 1 ♀, Hollywood, July 22, 1933 (John L. Buys) [Buys Colln.]. *Ontario*: ♀, Muskoka, Aug., 1925 (H. S. Parish) [Canad. Natl. Colln.]; ♀, London, 1896 [Hough Colln., Field Mus.]. *South Dakota*: ♂, Elk Point, June 19, 1924; 2 ♀, Yankton, June 23, 1924; ♀, Springfield, June 27, 1924; ♀, Winner, July 3, 1924 (All Coll. F. M. Hull) [S. Dak. State College].

A small series from Rock Creek, D. C., and Cabin John and Plummer's Island, Md. [U. S. Nat. Mus.] may possibly belong here, but the head is darker and the mesonotum is brown pollinose, near *O. carbonaria* Loew.

Oscinella painteri n. sp.

Near *O. nudiuscula* (Loew), but with median black bands on both mid and hind femora, and the ocellar tubercle not pollinose.

♂, ♀. Head black, only the face and cheeks brown, and the anterior fourth of the front and the lower third or half of the third antennal segment yellow, the basal antennal segment partially yellow to brown. Palpi black. Eyes sparsely pubescent. Frontal triangle and ocellar tubercle shining black or dark brown, narrowly separated from the eyes at its base and extending about $\frac{3}{4}$ the length of the front, with a row of fine incurved hairs set in minute punctures on each side. Width of the front narrower than that of an eye. Cheeks linear. Face concave, with a very slight facial carina. Third antennal segment orbicular; arista long pubescent, the basal segment not strongly enlarged. Ocellar and postvertical bristles erect and cruciate, 4 pairs of short reclinate fronto-orbital hairs, and a few pale inconspicuous frontal hairs.

Thorax shining black, only the scutellum, metapleura partially, and a small area antero-dorsal to the base of the wing, sparsely brown pollinose. Mesonotal hairs dark, rather long, arranged in rows. Bristles conspicuously long though not strong: 1 humeral, 1+1 notopleural (the upper posterior notopleural weak and scarcely noticeable), 1 postalar, 1 posterior dorsocentral, 1 apical scutellar bristles. The one pair of subapical scutellar bristles is slender and inconspicuous, though one-half of the length of the apical; apicals widely separated, at the angles of the short and broad, slightly trapezoidal scutellum.

Abdomen brown to black, dark haired, venter yellow.

All coxae and legs bright yellow, with broad black bands on mid and hind femora, the bands occupying approximately $1/2-3/5$ the length of the femora and leaving the ends broadly yellow, the yellow slightly broader basally. Apical tarsal segment of all legs browned.

Wings hyaline, slightly yellowish, veins light brown; second longitudinal vein concave, the second and third costal sectors subequal in length, third and fourth veins straight, divergent from their bases, fore cross-vein opposite or slightly proximad the middle of the discal cell. Anal angle of the wing not strongly developed. Halteres pale yellow.

Length: 1.25-1.5 mm.

Range: eastern to southeastern United States.

Type, ♂, near Plummer's Island, Maryland, Aug. 8, 1914, at light (R. C. Shannon). Allotype, same locality, Aug. 22, 1914, at light (R. C. Shannon). Type and allotype in the United States National Museum. Paratopotypes: 3 ♂, 1 ♀, Aug. 5, 1914 (one labeled "at light"); 1 ♂, Aug. 8, 1914, at light; 2 ♀, Aug. 1 and 17, 1914, at light (all collected by R. C. Shannon) [U. S. National Museum]. Paratypes: *Florida*: ♀, Ft. Mead, Aug. 13, 1930 (R. H. Beamer) [Snow Colln., Kansas Univ.]. *Georgia*: ♀, Prattsburg, July 25, 1930 (P. W. Oman) [Kans. Univ.]. *Illinois*: ♀, Dubois, May 25, 1917 [Ill. Nat. Hist. Survey], *Indiana*: ♂, 3 ♀, Lafayette, Aug. 24, 1916 [Ill. Nat. Hist. Survey]. *Maryland*: ♀, Plummer's Island, Aug. 23, 1928 (G. Enderlein) [Zool. Mus., Univ. Berlin]. *Michigan*: ♂ (?), Midland, June 6, 1936 (C. W. Sabrosky) [Author's Colln.]. *Mississippi*: ♀, Meridan, July 17, 1930 (L. D. Tuthill) [Kans. Univ.]. *New York*: ♂, ♀, Bear Mt., June 8, 1918 [Amer. Mus. Nat. Hist.]. *Oklahoma*: 4 ♂, 2 ♀, Eagletown, June 28, 1937 (Standish-Kaiser) [Oklah. A. & M. Coll.]. *South Dakota*: 2 ♂ (?), Springfield, June 26, 1924 (F. M. Hull) [S. Dak. State College].

The resemblance to *O. nudiuscula* is so close that the two have probably been confused in the past. The position of the legs or the method of mounting sometimes makes it difficult to determine whether one or both pairs of femoral fasciae are present.

I take pleasure in naming this species for Dr. R. H. Painter of Kansas State College, to whom the writer is deeply indebted for stimulating and encouraging his interest in the taxonomy of the Diptera.

Oscinella gigas n. sp.

Large, shining black, densely haired species, with the small entirely yellow antennae in strong contrast.

♀. Head black, the palpi, entire antennae except for the distal halves of the arista, face, cheeks, and anterior fourth or fifth of the front deep yellow, the face and cheeks with a dull whitish pollen. Clypeus, ocellar tubercle and triangle shining black, the latter rather broad basally but extending only half way to the anterior margin of the front. Front dull, wider than an eye, a narrow subshining non-pollinose stripe bordering each eye. Head higher than long. The height of the cheeks subequal to the height of the small third antennal segment and $1/4$ to $1/5$ the height of an eye, vibrissal angle not produced, vibrissal

hair distinct, lower half of the cheeks with numerous dark hairs. Facial carina strong. Eyes and arista short pubescent. All hairs and bristles black, the inner and outer verticals and the convergent postverticals stout but only moderately long and not conspicuous; ocellars erect and convergent, slender; five pairs of short fronto-orbital hairs and numerous short frontal hairs.

Thorax entirely shining black, slightly pollinose about the base of the wing and on the metapleura. Mesonotum and scutellum densely covered with short dark hairs set in fine punctures, the dorsocentral lines more densely punctured and slightly impressed. Bristles black, strongly developed though not long: 1 humeral, 1+2 notopleural, 2 postalar, 1 posterior dorsocentral, and 1 apical scutellar, the subapical scutellars less distinct.

Abdomen black, subshining though finely dark pollinose.

All coxae and legs shining black, the trochanters, knees, ends of the tibiae broadly and the tarsi bright yellow, the fore and mid tibiae usually pale brown centrally, sometimes appearing entirely deep yellow, the hind tibiae distinctly yellow on their apical third. Sensory area on the hind tibiae elongate and narrow.

Wings clear, veins brown, second costal sector longer than the third sector, third and fourth veins subparallel, fore cross vein joins the discal cell slightly beyond its mid-point; wings broad, the anal area well developed. Knob of halteres lemon-yellow, the stalk browned.

Length: 1.75-2.25 mm.

Range: north central United States (small series, however).

Type, ♀, Buttermilk Falls, Ithaca, New York, July 18, 1920 (M. D. Leonard). Type in the Cornell University Collection. Paratypes: Iowa: ♀, Dickinson Co., July 5, 1935 (Gould Warren), and ♀, Kossuth Co., July 7, 1933 ("V.R.S.") [Iowa Wesleyan College Colln.]. Minnesota: ♀, Big Stone Co., July 20, 1910 [Univ. Minn. Colln.]. One male, Hennepin Co., Minn., July 13-14, 1922 (W. E. Hoffmann) [Univ. Minn.] is much smaller (1.5 mm.) but agrees so well that it is probably the male of the species. Because of its poor condition and some uncertainty in associating it with the female, it is not included in the type series.

Oscinella gigas is close to *O. halterata*, but lacks the black halteres, partially pollinose triangle and spotted front which are characteristic of the latter species.

Oscinella lugubria n. sp.

Large, dark species, very close to *O. gigas* Sabrosky, but with much narrower, dark cheeks, black front, and darker legs and antennae. Like *O. gigas* it differs from *O. halterata* in the absence of pollen on the triangle.

♂, ♀. Head black, only the palpi orange to brown and the antennae orange, except for the brown arista and the apical fourth or third of the third antennal segment. Face and cheeks dark but occasionally paling to brown, especially the former. Front generally black, in some specimens brown to dark orange near the antennae, dull, narrow, subequal to or slightly narrower than an eye, and longer than broad. Triangle, including the ocellar tubercle, shining black, without pollen, short and nearly equilateral, extending only half way to the anterior margin of the front. Front strongly sloping, hence the antennae are inserted at or below the middle of the head, and the face is short. Facial carina weak. Cheeks narrow, barely half the height of the third antennal segment, the lower margin with a number of fine hairs. Vibrissal angle rounded receding, vibrissal hair slender but black and distinct. Proboscis short and fleshy. Eyes and arista short pubescent. All bristles and hairs black, only moderately long, the inner and outer verticals, cruciate postverticals, and erect, slightly converging ocellars rather stoutly developed; seven pairs of fronto-orbital hairs,

Thorax and abdomen as in *O. gigas*.

Legs similar to *O. gigas*, but the black more extensive, the trochanters usually dark, the knees very narrowly yellow, the hind tibiae almost entirely black except very narrowly at the extreme ends, and the fore and mid tibiae darker though still broadly yellow at the ends; tarsi yellow, the distal segment of each tarsus light brown.

Wings as in *O. gigas*.

Length: ♂, 2 mm.; ♀, 2.25-2.5 mm.

Type, ♂, Southwest Harbor, Maine, Aug. 20. Allotype, New Bedford, Mass. Paratypes: Maine: ♂, Orr's Island, July 24; 1 ♀, Tremont, Aug. 23. Massachusetts: ♂, ♀, Nantucket, June 21 and Sept. 14, 1927; 1 ♀, Auburndale, Aug. 2; 2 ♀, Groton, July 8, 1905. Rhode Island: 1 ♀, Kingston, July 25, 1905. Type, allotype and paratypes in the collection of the Boston Society of Natural History, paratypes in the writer's collection.

Except for the allotype, the above specimens represent records in the "Diptera of New England" (1925) and the Biological Survey of the Mt. Desert Region, Part I (1927), standing in the collection under the labels *Madiza nigripalpis*, *M. neglecta*, and *M. oscinina*.

Two females, Chester, Mass., Aug. 7, 1912, and Mt. Cadillac, Mt. Desert, Maine, Aug. 17, 1920, are probably the same species, but they differ in having slightly wider cheeks and more yellow on the antennae and legs.

Oscinella grandissima n. sp.

Near *Oscinella frit* (L.), but with a disproportionately developed head, semi-abbreviated wings, and yellow legs.

♂, ♀. Head large, viewed from above wider than the thorax and appearing nearly as large as the thorax, entirely coal black except for the obscurely dark orange to brown basal third of the third antennal segment. Front broad (Fig. 3), twice the width of an eye, yet longer than broad, subshining but not smooth and polished. Triangle entirely shining polished black, large, nearly touching the eyes at the vertex and ending broadly at the anterior margin of the front, each side margin with a row of fine hairs set in punctures. Face short, broader than high, shining above and dark pollinose below, facial carina low. Eyes bare; long axis of the eye at a 45° diagonal. Cheeks shining black, their height greater than the breadth of the third antennal segment and one-third the greatest length of the eye, but receding mesad almost horizontally from the lower eye margin so as to give the head an elongate oval profile when viewed from the front; a slight ridge extends from the posterior margin of each eye diagonally to the rounded vibrissal angle, the postero-ventral half convex and highly polished. Third antennal segment slightly but distinctly longer than broad, subrectangular, the lower margin longer than the upper; the arista appears bare under low power but is microscopically pubescent. Clypeus and oral opening small, proboscis short and fleshy, palpi with many strong black bristles. All hairs and bristles black, the outer vertical and cruciate postvertical bristles strongly developed, the inner verticals, the proclinate and slightly divergent ocellars and eight or nine pairs of fronto-orbitals short and scarcely distinguishable from the hairs.

Thorax entirely coal black, only a small area behind the wing pollinose, the pleura smooth and polished but the mesonotum with the shine interrupted by microscopic wrinkling or facetting; mesonotum short and broad, seemingly broader than long, the breadth due to a flattening and extension of the notopleural area, the notopleural margin rather acute, with the pleura receding ventro-mesad at a 45° angle, except for a strong vertical bulge from the base of the wing to the middle coxa, the sternopleura unusually large. Mesonotum with numerous rows of short dark hairs which are almost unnoticeable except under high magnification. Bristles black and fairly strong but not conspicuous: 1+2

notopleural, 1 postalar, 1 posterior dorsocentral, 1 apical scutellar, the latter pair set far apart at the angles of the short, shining, subtrapezoidal scutellum; the humeral and the one pair of subapical scutellars slender and inconspicuous.

Abdomen black, shining, the dorsum sparsely dark pollinose.

Legs chiefly orange yellow, all coxae shining black, and most of the fore tarsi and distal two to three segments of the other tarsi black; in most specimens the femora are chiefly orange yellow, slightly infuscated on the proximal half to two-thirds, but in one female of the series, the proximal $2/3$ of fore and hind femora and the proximal half of the mid femora are black. "Sensory area" on the hind tibiae narrow, elongate, and black.

Wings abbreviated in proportion to the size of the body, barely subequal in length to the head plus thorax. Wings clear, browned along the veins, the veins strong and dark brown except towards the base of the wing. Venation as in Figure 4, the second costal sector slightly longer than the third, the third sector twice the length of the fourth, third and fourth veins gently concave anteriorly, with the fourth vein ending at or before the apex of the wing; the fore cross vein joins the discal cell beyond its mid-point. Penultimate section of fifth vein concave with no evidence of a flexure. Halteres lemon-yellow with brown stalk.

Length of body: ♂, 2-2.25 mm.; ♀, 2.5 mm.

Length of wing: ♂, 1.5 mm.; ♀, 1.75 mm.

Type, ♂, Longmont, Colorado, July 1, 1937 (M. & H. James). Allotype, same data. Type and allotype in the Colorado State College Collection. Paratopotypes: 1 ♂, 8 ♀, same data as type [Colo. State College, and the writer's collection]. Paratypes: *Colorado*: 1 ♀, Ft. Collins, June 28, 1937 (M. T. James), and 1 ♀, Roggen, July 6-7, 1937 (M. T. James and C. H. Moss) [Colo. State College]; 1 ♀, Pingree Park, Aug. 22, 1931 (R. H. Beamer) [Kans. Univ.]. *New Mexico*: 1 ♀, Cloudcroft, May 27, 1902 [Acad. Nat. Sci. Phila.].

In some respects, the species appears like an exaggerated version of *Oscinella frit* or *O. nitidissima*, but the larger head and smaller wings, both out of proportion to the rest of the body, set it apart as a peculiar species.

The specimens from Pingree Park, Colo., and Cloudcroft, N. Mex., are somewhat atypical, but agree well with this peculiar species in most respects. In these specimens, the legs are definitely black where typical specimens are infuscated, and in addition they have a narrow fuscous band on the hind tibiae. The wing is shorter, the third vein more concave, and the second and third costal sectors subequal. The wing differences in degree of abbreviation probably should not be emphasized, since there is a difference between the right and left wings of the same individual in the Cloudcroft specimen. In the Pingree Park specimen, the head is also proportionately smaller, subequal in width to the thorax.

Oscinella griseescens n. sp.

Small, black species with gray pollinose triangle and thorax and predominantly yellow legs.

♂. Head predominantly yellow, the frontal triangle and occiput black, dark gray pollinose, the posterior corners of the front near the triangle brown, clypeus narrow and shining black, proboscis black, third antennal segment browned at apex, arista brown. Eyes sparsely and microscopically pubescent. Front narrower than an eye, longer than broad, the triangle broad and short, not extending half way to the anterior margin of the front. Face receding in profile, so that the length of the cheeks is barely over half the length of the front. Vibrissal angle rounded, the vibrissal hair long, pale. Cheek width equals $2/3-3/4$ the breadth of the third antennal segment and $1/4$ the height of the eyes. Antennae small, arista pubescent. The usual bristles and hairs are yellow to brown, the post-verticals cruciate and the ocellars erect; five pairs of long fronto-orbital hairs.

Thorax entirely black and densely lead-gray pollinose, only the metanotum and the posterior slope of the sternopleura bare of pollen and polished black, the propleura in part and the apical margin of the scutellum yellow to orange. Mesonotum densely covered with very short pale hairs. Bristles long and slender, pale brown: 1 humeral, 1+2 notopleural, 2 postalar, 1 posterior dorso-central, 2 subapical and 1 long apical scutellar. Three long bristles are present on the posterior slope of the mesonotum, on a line between the posterior dorso-centrals.

Abdomen brown, each segment typically with a narrow yellow band along the posterior margin.

All coxae and legs yellow, more or less infuscated on the fore and hind femora and tibiae, sometimes all femora and tibiae infuscated, at least centrally on the outer surfaces, in all cases the infuscation moderate. No spur or spur-like bristle on the hind tibiae. Sensory area long and narrow.

Wings clear, veins yellowish, the second costal sector strikingly long (Fig. 5), twice as long as the third sector, second vein straight, the third vein slightly and the fourth decidedly convex anteriorly. Fore cross vein at or slightly before the middle of the discal cell. Halteres yellow.

♀. Like the male, except the legs more generally yellow, in most cases only a broad median band on the hind tibiae, sometimes also the hind femora opposite the tibial band, infuscated, rarely traces of a pattern similar to the male. The specimens of the series differ so much in leg coloration, probably due to the slightly teneral condition of many, that it is difficult to generalize on the characteristic pattern of males and females, but the series is large enough to indicate a definite sexual dimorphism, with yellow-legged females and darker-legged males.

Length: 1.25-1.75 mm.

Range: southeastern United States.

Type, ♂, Billy's Island, Okefenokee Swamp, June 15, 1912. Allotype, same locality, June, 1912. Type and allotype in the Cornell University Collection. Paratopotypes: 6 ♂, 4 ♀, June 15, 1912; 4 ♂, 7 ♀, June, 1912; 4 ♂, 4 ♀, July, 1912 [Cornell Univ., and the writer's collection]. Paratypes: *Alabama*: 1 ♀, Mobile, Oct. 18, 1922; 3 ♂, 4 ♀, Kushla, October, 1924 (A. H. Sturtevant); 1 ♂, 3 ♀, Kushla, Aug. 20-31, 1918 (♂, ♀), and Oct. 7-19, 1922 (2 ♀) (A. H. Sturtevant) [Amer. Mus. Nat. Hist.]. *Florida*: 2 ♂, 1 ♀ Waldo, Aug. 18, 1930 (R. H. Beamer) [Kans. Univ. Colln.].

This species is strikingly similar to several other species which fall in Duda's group, *Conioscinolla*, notably *soluta* Becker and its variety *rufoscutellata* Duda of the Neotropical region, and *infesta* Becker of eastern United States, with the latter of which it has probably been confused in times past. Its natural affinities are with the Neotropical species *soluta*, however, and not with northern species. The slight but constant characters of the three species are as follows:

1. Metanotum narrow, chiefly bright gray pollinose; notopleural bristles 1+1; second longitudinal vein concave anteriorly, the second costal sector subequal to or only slightly longer than the third sector..... *O. infesta* Becker
Metanotum large, polished black except laterally; notopleural bristles 1+2; second longitudinal vein straight, or at most curving forward only at the apex, the second costal sector decidedly longer than the third sector, usually twice as long 2.
2. Pleura gray pollinose except for the posterior slope of the sternopleura; cheeks broader, usually $\frac{3}{4}$ the breadth of the third antennal segment
..... *O. griseus* Sabrosky
Lower half of the pleura almost entirely polished black, cheeks narrower, $\frac{1}{3}$ the breadth of the third antennal segment *O. soluta* Becker and varr.

Oscinella triorbiculata n. sp.

Small black, gray pollinose species, close to the Palearctic *O. frontella* Fallén.

♂. Head black, the palpi, face, cheeks, antennae except for the arista and the brown apical half of the third segment, and the anterior half of the front, deep yellow. Front broader than the width of an eye (Fig. 6), the sides narrowing anteriorly. Triangle short and broad, the apex barely half way to the anterior margin of the front, dark gray pollinose and not sharply delimited from the front, with three small, bare and polished black eye-like spots adjoining the ocelli, the median spot anterior to the median ocellus and the other spots immediately laterad the posterior ocelli. The three shining areas are variable in extent, but are always distinctive in appearance. Face receding, the vibrissal angle obtuse. Cheeks narrow, 1/2 the breadth of the third antennal segment and 1/5 to 1/6 the height of an eye, with two rows of short hairs along the lower margin. Eyes and arista microscopically short pubescent, the eyes sparsely so. Bristles and hairs short and black, the postverticals cruciate and the ocellars erect and slightly convergent; five pairs of long, and some shorter anterior, fronto-orbital bristles.

Thorax entirely black, densely brown to brown-gray pollinose except for the polished black, large metanotum and the lower half of the pleura. Mesonotum with numerous short brown hairs arranged in rows, two rows between the median and each dorsocentral position. Bristles long and black: 1 short humeral, 1+2 notopleural, 2 postalar, 1 posterior dorsocentral, and 1 apical and 1 subapical scutellar.

Abdomen brown, basally yellow, subshining though finely brown pollinose, with brown, dark hairs.

Legs generally yellowish in appearance, but all coxae, all femora except the knees broadly, and all tibiae centrally, more or less brown to blackish brown, the apical segment or two of all tarsi blackish. In some specimens, the fore and mid tibiae are yellowish. Sensory area straw colored, elongate oval.

Wings clear, veins light brown, venation similar to *O. grisea* (cf. fig. 5), the second vein only gently concave anteriorly, hence the second costal sector is much longer than the third, at least 1½ times; third vein straight, fourth vein slightly but distinctly convex anteriorly; fore cross vein opposite the middle of the discal cell. Halteres yellow.

♀. Like the males, but the coxae and legs usually appear more yellowish, often with more or less infuscation on all femora and the hind tibiae.

Length: 1.25-1.5 mm.

Range: eastern United States.

Type, ♂, Billy's Island, Okefenokee Swamp, Georgia, July, 1912. Allotype, same locality, June 15, 1912. Type and allotype in the Cornell University Collection. Paratopotypes: 8 ♂, 15 ♀, June, 1912; 3 ♂, 2 ♀, June 15, 1912; 4 ♀, July, 1912 [Cornell Univ. and the Author's Colln.]. Paratypes: *Alabama*: ♀, Burnsville, July 20, 1930 (P. W. Oman) [Kans. Univ.]. *Arkansas*: 10 ♂, 13 ♀, Fayetteville, various dates, May 19 to July 26, 1906, and 1 ♀, same locality, June 18, 1907 [Ark. Univ. Colln.]. *Florida*: 5 ♂, 5 ♀, Belle Glade, Mar. 6, 1930, taken in *Hippelates* trap (D. G. Hall) [U. S. Nat. Mus.]. ♀, New Smyrna, Mar. 1, 1931, taken with *Hippelates* flies about man [U. S. Nat. Mus.]; ♀, Brantford, July 31, 1930, (L. D. Tuthill) [Kans. Univ.]; ♀, Fruitville, Aug. 11, 1930 (R. H. Beamer) [Kans. Univ.]. *Georgia*: ♀, Thalman, April 28, 1912, and 2 ♀, Spring Creek, Decatur Co., June 7-23, 1911 and July 16-29, 1912 (J. C. Bradley) [Cornell Univ.]; ♂, Tifton, Oct., 1896 [Hough Colln., Field Mus.]. *Kansas*: ♀, Manhattan, June 9, 1934 (C. W. Sabrosky) [Author's Colln.]; ♀, Manhattan, June 18, 1930 (D. A. Wilbur) [Author's Colln.]; ♀, Lawrence, Aug. 23, 1934 (M. W. Sanderson) [Author's Colln.]; ♀, Lyons Co., June 15,

1923 (R. H. Beamer) [Kans. Univ.]. *Louisiana*: ♂, Tallulah, Aug., 1935, "reared from boll weevil infested cotton sq." [U. S. Nat. Mus.]. *Michigan*: ♂, Empire, June 23, 1937; ♀, Allegan Co., June 24, 1938; ♀, Hart, June 18, 1937; 2 ♀, Douglas Lake, Cheboygan Co., June 29, July 13, 1931 (All coll. C. W. Sabrosky) [Author's Colln.]; 2 ♀, Antrim Co., June 24, 1939 (C. B. Dibble) [Mich. State College]; ♂, ♀, Midland Co., June 30, 1936 (R. R. Dreisbach) [Dreisbach Colln.]. *Minnesota*: ♂, 2 ♀, North Branch, Aug. 6, 1922 (Wm. E. Hoffman); ♂, North Branch, Aug. 5, 1922 (H. H. Knight); ♂, Taylor's Falls, Aug. 12, 1925 (Sam Kepperly) [All in Univ. Minn. Colln.]. *Missouri*: 2 ♀, Atherton, July, Sept. (C. F. Adams) [Purdue Univ. Colln.]. *New York*: ♂, Geneva, Aug. 15, 1928 (G. Enderlein) [Zool. Mus. Univ. Berlin]. *Ohio*: ♀, Wauseon, Aug. 25, 1902 (Jas. S. Hine) [Hine Colln., Ohio State Univ.]. *Oklahoma*: ♂, Broken Bow, June 29, 1937; 2 ♀, Eagletown, June 28, 1937; 2 ♀, Ada, July 16, 1937 (All Coll. John Standish and R. W. Kaiser) [Oklah. A. & M. Coll.]. *South Carolina*: ♀, Batesburg, Aug. 24, 1930 (J. Nottingham) [Kans. Univ.]; ♂, 2 ♀, Florence, Aug. 7, 1935, "reared from boll weevil infested cotton sq." [U. S. Nat. Mus.].

Proportion of sexes in the type series: 37 ♂, 70 ♀.

The resemblance to *Oscinella frontella* (Fallén) of Europe is so marked that it was at first thought that they were the same species. In the available material of *frontella*, determined by Duda and checked with Duda's detailed redescription, the fore cross vein is beyond the middle of the discal cell ("am 2. Drittel" according to Duda), and the frontal triangle ends acutely and is longer than in *triorbiculata*, about 3/5 as long as the front. Although slight, these differences are consistent in the available specimens, and denote at least sub-specific if not specific status for the North American form.

ON THE IDENTITY OF *MACROBASIS UNICOLOR* (KBY.) AND SOME ALLIED SPECIES (COLEOPTERA, MELOIDAE)*

BY W. J. BROWN,

Ottawa, Ontario

The following notes concern the four northern species that fall to *unicolor* (Kby.) in Horn's key to the species of *Macrobasis* (1885, Trans. Amer. Ent. Soc., XII, 110). These species are more or less confused in most collections, and while all have been described, there remains some confusion regarding their nomenclature. It appears that the name *unicolor* (Kby.) is preoccupied and that it must be replaced with the name *murina* (LeC.). The latter should be used for the species confined to southeastern Canada and to adjacent parts of the United States, and the "ash-gray blister beetle" of more southern and western regions should be known as *Macrobasis fabricii* (LeC.). The four species appear to differ from one another only by the characters given in the following key. They differ from others of the genus by the following combination of characters: size moderate, the body rarely attaining a length of 15 mm.; integuments of body and appendages entirely black, but the general color modified by the vestiture except in *subglabra* Fall; male with the first segment of each antenna as long or longer than the two following, curved near the base, its margins not sinuate apically; female with the first and second segments of each antenna smaller than in the male; each anterior tibia with two spurs in both sexes.

*Contribution No. 2020, Division of Entomology, Science Service, Department of Agriculture, Ottawa.

KEY TO THE SPECIES

1. Antennae of the male with the basal segments much smaller; the first segment of each attaining a point midway between the eye and the summit of the head; the second segment about half as long as the first, seven-tenths as long as and scarcely wider than the third and fourth. Maxillary palpi large, the terminal segment of each fully half as long as the first antennal segment in the male. Femora and trochanters with their hind margins supplied with a fringe of long, closely placed, curved hairs in the male. Vestiture abundant, grayish-yellow, the body therefore grayish but with a yellowish cast *flavocinerea* Blatch.
- Antennae of the male with the first and second segments larger; the first attaining or almost attaining the summit of the head; the second much wider than the third, subequal in length to or longer than the third and fourth. Maxillary palpi much smaller, the terminal segment of each not more than one-third as long as the first antennal segment in the male. Femora and trochanters without fringes of long hairs. Vestiture, when abundant, white, the body never with a yellowish cast 2.
2. Male with the posterior margin of each first antennal segment supplied with white hairs; the second segment never curved, much less elongate, half as long as the first and subequal in length to the two following, four- to five-tenths as wide as long. Vestiture abundant, the body gray *fabricii* (LeC.)
- Male with the first antennal segment lacking white hairs; the second segment usually more or less curved, two-thirds as long as the first, equal in length to the two and one-half or three segments following; not more than one-third as wide as long 3
3. Vestiture distinct, moderately abundant, white; the body therefore dark gray *murina* (LeC.)
- Vestiture very fine and sparse, indistinct, white or reddish-brown; body black, its color not at all modified by the vestiture *subglabra* Fall

Macrobasis flavocinerea Blatchley

Macrobasis flavocinereus Blatchley, 1910, Coleoptera or Beetles Known to Occur in Indiana, 1359.

The types of this apparently very rare species were taken in Starke County, Indiana. The species is represented in our collection by three males from Byron and Leamington, Ontario, and from Aweme, Manitoba. The vestiture of *flavocinerea* is as close and conspicuous as that of *fabricii*.

Macrobasis fabricii (LeConte)

?*Lytta cinerea* Fabricius, 1798, Supplementum Entomologiae Systematicae, 119.

?*Cantharis cinerea* (Fabricius), Harris, 1821, Boston Jour. Phil., I, 497 (not seen); 1841, A

Report on the Insects of Massachusetts Injurious to Vegetation, 111.

Lytta fabricii LeConte, 1853, Proc. Acad. Nat. Sci. Phila., VI, 343.

Lytta debilis LeConte, 1853, Proc. Acad. Nat. Sci. Phila., VI, 344.

Macrobasis unicolor of authors (in part).

In this species, the vestiture is more abundant and conspicuous than in any of the others except *flavocinerea*, and the general color is therefore a paler gray than in *murina*. However, specimens in poor condition may resemble *murina* in this respect and may lack the white vestiture of the first antennal segment of the male.

Most of the references to *unicolor* in the literature of economic entomology apply to this species which occurs from North Dakota and Massachusetts to New Mexico and Georgia. In Canada it is abundant in the most southern parts of Alberta, Saskatchewan, and Manitoba, but it is known in the east only from the Lake Erie district of Ontario.

It is impossible to identify *cinerea* Fab. from the original description. Reference to the LeConte collection and to the original description leaves no

doubt as to the species to which LeConte applied the name *fabricii*. The original description of *debilis* was based on two females; one of these remains in the LeConte collection and appears to represent the present species rather than *murina* (LeC.).

Macrobasis murina (LeConte)

Cantharis unicolor Kirby, 1837, in Richardson, Fauna Boreali-Americana, 241. (not Faldermann, 1835, Nouv. Mém. Soc. Nat. Moscou, IV, 195).

Lytta murina LeConte, 1853, Proc. Acad. Nat. Sci. Phila., VI, 344.

Macrobasis murina (LeConte), Fisher, 1919, Proc. Ent. Soc. Wash., XXI, 1 (in part); Chittenden, 1926, Bull. Brook. Ent. Soc., XXI, 118.

Macrobasis unicolor of authors (in part).

This species appears to differ from *fabricii* LeC. only in the secondary sexual characters of the male and in having the vestiture less abundant and the general color therefore a little darker. The species is abundant in south-eastern Canada where it is known to occur from the Lake Superior region to New Brunswick. It is not known from the Lake Erie region of Ontario. The collection of the United States National Museum contains specimens from New England, from New York, Michigan, and Wisconsin, and from Brown's Mills, New Jersey, Pocono Lake, Pennsylvania, Chicago, Illinois, and Sheridan, Wyoming. Among these are the specimens recorded by Chittenden as *murina* and Michigan and Lake Superior specimens which are evidently those recorded under the same name by Fisher. The material in this collection suggests that the species is seldom taken in the United States except in New England.

Kirby wrote that the first antennal segment of *unicolor* is "curved and nearly twice the length of the second", that the second is "as long as the three following ones together", and that the body is "hoary from numerous decumbent white hairs.". Only the present species satisfies this description. The type was "Taken in Canada by Dr. Bigsby" who, judging by other writings of Kirby, collected in the region of Lake Huron from Drummond Island, situated in the north-western part of that lake, to Lake St. Clair. The description of *murina* was based on two male specimens from Lake Superior. One of these, labelled to indicate that it came from the northern shore of Lake Superior, remains in the LeConte collection. It has the second antennal segment curved and equal in length to the two and one-half segments following and has distinct vestiture that gives the body a dark gray color.

Macrobasis subglabra Fall

Macrobasis murina (LeConte), Fisher, 1919, Proc. Ent. Soc. Wash., XXI, 1 (in part).

Macrobasis subglabra Fall, 1922, Can. Ent., LIV, 173.

This species may be recognized by its truly black color and very indistinct vestiture. It was first recognized as distinct from *fabricii*, the gray species with which it frequently occurs, by Fisher. It is represented in the United States National Museum by specimens from North Dakota and South Dakota only. In Canada it is abundant in Alberta, Saskatchewan, and Manitoba, extending as far north as Edmonton, the type locality, in Alberta and to Berens River in Manitoba.

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